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Coastal Ecosystem Health/Habitat Loss and Resource Degradation

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Extended Abstract/Summation
for
Contribution for Panel B (4) – The Watershed or Ecosystem Manager *by* W.- Dieter N. Busch,
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Our principles for natural resource management are based on the "Public Trust Doctrine." This Doctrine holds our governments responsible for the stewardship of the natural resources. By political design, our aquatic natural resource management is shared by a number of state and federal agencies, each with specific responsibilities such as water and air quality, physical changes within the basin and its shoreline, water use, water inflow, mining, harvest of regional and/or inter-jurisdictional living resources, stocking, research in many of the listed topics, etc. So, what agency should be the place where "the buck stops?" I suggest that this agency should be the one with the responsibility to manage and protect the living resources. This is totally in line with the Public Trust Doctrine.

Managers, scientists, the public, and politicians have recognized the need to use a holistic approach for effective natural resource management of specific geographic regions. This approach has been successfully applied in specific terrestrial ecosystems. The application of an ecosystem-based approach is greatly simplified when the managed area is "owned" by one authority such as the National forests by the U.S. Forest Service. Aquatic systems substantially within such larger ecosystems have also benefited from the use of holistic management. However, since most large aquatic ecosystems/watersheds are not contained within an area owned and managed by a single authority, the application of holistic management is frequently hindered by conflicting goals, objectives, and responsibilities of the various management agencies.

A number of aquatic ecosystem management initiatives have been, to various degrees, successful. International and regional examples include Australia's marine fisheries, some aspects of Alaskan fisheries, specific focus on coral reefs, and the Great Lakes. However, successes have not been easy due to a number of challenges common to all. These challenges continue to hinder further advances in the application of an ecosystem-based approach.

Three key challenges are: (1) What agency (if any) has the legal responsible for the health of the ecosystem/watershed? (2) What are the goals and comprehensive, quantifiable objectives for the healthy/restored ecosystem? and (3) Lack of interest in comprehensive fisheries management by the responsible agencies.

Issue #1

The Great Lakes perspective on ecosystem management is informative in that the bi-national setting resulted in political action to reverse very significant ecosystem destruction, especially in Lakes Erie and Ontario. The impact of losses of critical habitats, native species, and degradation of water quality were compounded by the accidental and willful introduction of exotic species. Canadian and U.S. political recognition of the problems resulted in the Great Lakes Water Quality Agreement. This Agreement requires an "ecosystem-based approach" to restore the ecosystems of the individual lakes. The U.S. Environmental Protection Agency and Environment

Canada have been assigned the leadership and have received extra funding. However, their important inter-agency coordination efforts to restore the health of each lake's ecosystem are frustrated by some of the state fishery management agencies. These state agencies allowed the introduction of some exotic species. They are now managing the native and non-native fisheries for the sustainability of these exotics.

The Great Lakes States have not requested congressional approval, as required by the Constitution, to form legal inter-state fisheries management teams. As a result, each state acts as an individual management unit for its portion of the lake ecosystem. Inter-state coordination and recommendations are to be voluntary; however, in practice these Lake Committees manage the inter-state/bi-national fishery without federal involvement. It has been very difficult to get the Lake Erie and Lake Ontario Fishery Committees to identify and development long-term goals and comprehensive, quantifiable objectives for healthy/restored ecosystems that are reflective of historical conditions and productivity. These are urgently needed by the habitat management agencies and have hindered the ecosystem restoration progress required by the Great Lakes Water Quality Agreement.

The Chesapeake Bay perspective is a counterpoint to the Great Lakes. The fisheries of this bi-state ecosystem can be legally managed unilaterally by each state within its waters (true for all states) or inter-state through the congressionally approved compact that established the Atlantic States Marine Fisheries Commission (ASMFC). Therefore, the management of the Bay's fisheries and ecosystem should benefit by this legal management structure which is lacking in the Great Lakes. However, the Bay does not have the benefit and legal requirements for an ecosystem-based management approach provided by the Great Lakes Water Quality Agreement. Therefore, the various agencies with responsibility for the complex interagency water quality issues, physical habitat, and biological resources in the Bay are frequently in the news for what they plan on doing but are not effectively resolving the degradation issues.

Although the inter-state fisheries management is legally enforceable in the Bay and the Atlantic coast, the ASMFC focuses exclusively harvest regulations. The Commission has selected not to pursue an ecosystem-based approach in managing the resources. This is predictable since the managers from each of the participating states do not have direct responsibilities for protecting/restoring the biological, chemical, or physical health of the ecosystem/watershed. Of course, if this ecosystem was covered by comprehensive federal legislation like the Great Lakes Water Quality Agreement, changes in management would be required.

A recent, fast-track initiative by the State of Maryland to restore the Bay's oyster harvest is an example of unilateral action with potentially severe ecosystem and inter-state wide consequences. Native "eastern oyster" harvest has decreased to approximately 2 percent of historical levels for the Atlantic coast and down to 0.2 percent for the Bay. Diseases, lost habitat, reef destruction, freshwater inflow, and over harvest are reported to all have contributed to the drastic decline. Maryland's solution is to introduce an exotic oyster from Asia that had been unsuccessfully introduced to the Pacific West coast. This effort by Maryland's fishery management agency does not address or resolve the habitat stresses impacting oyster survival and abundance. For example, during some weeks in the summer, 60 percent of the Bay's bottom waters have no to low oxygen levels greatly limiting the availability of oyster habitat. Furthermore, the introduction of an exotic oyster into the open Bay waters can push its native counter part over the edge towards extinction without resolving the habitat issues that are depressing the Bay's various native species.

Goals and comprehensive, quantifiable objectives are critically needed for each ecosystem. These should be descriptive of their healthy/restored state and be developed and supported by the public. They should be developed by the fisheries management agencies since the health, abundance, and distribution are indicative of the health of the ecosystem (miner's canary). However, fisheries management agencies and agency personnel have shown reluctance in preparing them. Reasons for not preparing them include: *1. What is wrong with what we have? 2. The ecosystem has been greatly changed/disrupted from the historical and we can not go back in time. 3. The causes of the ecosystem changes are the responsibility of other agencies; we can not address them.* These reasons were provided by senior regional fisheries managers in an effort to assist New York State in developing goals and objectives for some Lake Ontario tributaries. Eventually it became clear that the efforts to help them on these tasks were instead perceived as criticism of their recent/past management efforts (example of the "slipping baseline syndrome?").

The availability of goals and comprehensive, quantifiable objectives for an ecosystem/watershed that provides descriptions of the desired physical and chemical setting and the structure and abundance of key living resources would provide focus and needed direction to the activities of all the relevant resource management agencies. The objectives should be stepped down to criteria or needed target levels and desired aquatic communities. Human activities with negative impacts could be identified and prevented or mitigated while restoration activities could be implemented based on the mission of the various agencies.

Issue #3

Living resource management agencies frequently demonstrate a critical weakness in holistic resource management leadership. This is contributing to lost direction and ecosystem restoration and management confusion. Although the agencies strong suit is managing the harvest of the resources under their jurisdiction, even this activity is frequently challenged in court. Part of the problem may be inadequate data which allow different interpretation by the fishing versus the conservation interest. Another problem may be the optimism by managers that their harvest regulations will have the quantified, limiting impact on landings. However, this is frequently not the case. For example, a Law Enforcement Committee supported by the ASMFC has evaluated various harvest regulations and given them effectiveness coefficients. Although none are rated at 100 percent, management has been slow in including the effectiveness coefficients.

The other holistic stewardship responsibilities assigned to the fisheries management agencies through the principles in the "Public Trust Doctrine" receive little attention and funding. For example, every fisheries management agency has in addition to harvest regulation also *advisory responsibilities*. These responsibilities have been codified by the National Environmental Policy Act (NEPA) and the Fish and Wildlife Coordination Act (FWCA). Most fisheries agencies routinely respond to requests for comments from other agencies. However, effective and meaningful advice requires that the responding agency has up-to-date information and in-depth knowledge dealing with the natural resources and the potentially impacted resources (Would you expect any less when asking for medial advice from your Doctor?). This is often not the case because the advisory responsibilities are considered lower priorities than the agencies direct regulatory efforts on harvest and do not get the funding and staff.

Also, management agencies with a large research division may find that the research division enjoys its prominence as the source of knowledge. It may, therefore, be difficult by the agency to direct funding to non-research activities such as long-term monitoring programs. Long-term trends are vital for management decisions and for the agencies advisory responsibility but may not fit into the typical research cycle. This, for example, has been a problem in the Great

Lakes when the Great Lakes Center was transferred from the U.S. Fish and Wildlife Service (applied research and management support) to the U.S. Geological Service (research).

One can conclude that the three "key" issues addressed above are inter-related. The positive advancement in any one issue would support/advance the implementation of an ecosystem-based management approach. For example, federal or state legislation requiring a holistic or ecosystem-based approach for natural resource management would, of course, provide leverage for advancing this concept.

When laws requiring an ecosystem-based approach are not available, a surrogate to substitute for such legislation could be the development of natural resource goals and objectives descriptive of healthy and restored ecosystems. This process needs proactive, direct ecosystem management leadership from the responsible fisheries management agencies.

The current operational approach to resource management followed by the fisheries management agencies does not encourage/require their proactive leadership for aquatic ecosystems management. If fisheries management agencies took a holistic approach to their stewardship responsibilities, they would be fulfilling the responsibilities passed to them by the Public Trust Doctrine and by the ecosystem-based approach to resource management codified in the advisory responsibilities given to them by NEPA and FWCA.

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